

Name: \_\_\_\_\_

Review for Quarter 1 Exam 2: Be sure to study your notes and homework assignments as well.

- 1) The expression  $\sqrt{-18x^3y^4}$ , where  $x$  and  $y$  are *both* greater than zero, is equivalent to  
 A)  $9xyi\sqrt{2}$                       B)  $-3xy^2\sqrt{2x}$                       C)  $3xy^2\sqrt{2ix}$                       D)  $3xy^2i\sqrt{2x}$
  
- 2) Express in simplest form in terms of  $i$ :  $\sqrt{-12}$
  
- 3) Express in simplest form in terms of  $i$ :  $\frac{1}{3}\sqrt{-144}$
  
- 4) The sum of  $\sqrt{-18}$  and  $\sqrt{-72}$  is  
 A)  $9i\sqrt{2}$                       B)  $3\sqrt{10}$                       C)  $36i$                       D)  $6i$
  
- 5) Expressed in simplest form,  $\frac{\sqrt{-50}}{\sqrt{2}}$  is equivalent to  
 A)  $-5i$                       B)  $-5$                       C)  $5i$                       D)  $5$
  
- 6) Express in simplest form in terms of  $i$ :  $3\sqrt{-27} + 4\sqrt{-48}$
  
- 7) Express in simplest form in terms of  $i$ :  $(3i)(6i)$
  
- 8) Express in simplest form in terms of  $i$ :  $\frac{3}{2i}$
  
- 9) Express  $3\sqrt{-32} - \sqrt{-8}$  as a monomial in terms of  $i$ .
  
- 10) The value of  $2i^8$  is  
 A)  $-2$                       B)  $-2i$                       C)  $2i$                       D)  $2$
  
- 11) The value of  $(5i^3)^3$  is  
 A)  $-125i$                       B)  $-15i$                       C)  $125i$                       D)  $15i$

- 12) When simplified,  $i^{99}$  is equivalent to  
A)  $i$                                       B)  $-i$                                       C)  $-1$                                       D)  $1$
- 13) When simplified,  $i^{27} + i^{34}$  is equal to  
A)  $-i - 1$                                       B)  $i$                                       C)  $i - 1$                                       D)  $i^{61}$
- 14) Express as either 1, -1,  $i$ , or  $-i$ :  $i^{303}$
- 15) For *all* values of  $a$  and  $b$ , what is the additive inverse of  $a + bi$ ?  
A)  $-a + bi$                                       B)  $a + bi$                                       C)  $-a - bi$                                       D)  $a - bi$
- 16) The sum of a complex number and its conjugate is always  
A) a pure imaginary number                                      C)  $1$   
B) a pure real number                                      D)  $0$
- 17) What is the sum of  $5 - 3i$  and the conjugate of  $3 + 2i$ ?  
A)  $2 - 5i$                                       B)  $2 + 5i$                                       C)  $8 - 5i$                                       D)  $8 + 5i$
- 18) Evaluate and simplify in  $a + bi$  form:  $(6 - 2i\sqrt{6}) - (4 + 4i\sqrt{6})$
- 19) The expression  $(2 + i)^2$  is equal to  
A)  $3 + 4i$                                       B)  $5 + 4i$                                       C)  $3$                                       D)  $5$
- 20) What is the product of  $-4 - 7i$  and its conjugate?  
A)  $33$                                       B)  $-33$                                       C)  $1$                                       D)  $65$
- 21) Find the multiplicative inverse of  $3 - 2i$ .
- 22) Simplify in  $a + bi$  form:  $(2 + i)(3 - 6i)$
- 23) Simplify in  $a + bi$  form:  $(3 + 2i)(3 - 2i)(1 + i^2)$

24) The multiplicative inverse of  $3 - i$  is

A)  $\frac{3 - i}{8}$

B)  $\frac{3 + i}{10}$

C)  $\frac{3 + i}{8}$

D)  $\frac{3 - i}{10}$

25) Plot  $-4 + 3i$  on the complex plane.

26) Graph the vectors of  $-4 + 3i$  and  $6 + 2i$  and the vector of their sum.

27) What is the magnitude of the complex number  $z = 5 + 12i$ ?

A) 7

B) 17

C) 169

D) 13

28) What is the magnitude of the complex number  $z = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}i$ ?

A) 1

B) 2

C)  $\sqrt{2}$

D)  $\frac{\sqrt{2}}{2}$

29) Solve:  $4x^{\frac{1}{5}} + 2 = 10$

30) Solve:  $a^{-\frac{1}{3}} - 1 = 2$

31) Solve:  $16^{x-1} = 8^x$

A)  $x = \frac{1}{4}$

B)  $x = \frac{4}{3}$

C)  $x = 4$

D)  $x = -1$

32) Solve:  $27^{2x+1} = 9^{4x}$

33) Solve:  $3^{x+1} - 5 = 22$

34) Simplify:  $\frac{\sqrt[3]{25}}{\sqrt[3]{16}}$

A)  $\frac{5}{4}$

B)  $\frac{\sqrt[3]{100}}{4}$

C)  $\frac{\sqrt[3]{25}}{4}$

D)  $\frac{\sqrt{100}}{4}$

35) Simplify:  $6\sqrt{54} - 3\sqrt{24} - 8\sqrt{96}$

A)  $3\sqrt{30} - 8\sqrt{6}$

B)  $-20\sqrt{6}$

C)  $-8\sqrt{6}$

D)  $10\sqrt{6}$

36) The expression  $(-3x^2y^3)^3$  is equivalent to

A)  $-9x^6y^9$

B)  $-27x^5y^6$

C)  $-3x^5y^6$

D)  $-27x^6y^9$

37) Simplify:  $(-\frac{2x}{z^2})^3$

38) Find the value of  $8^{\frac{2}{3}}$ .

A)  $\sqrt[3]{8^2}$

B)  $\sqrt[3]{16}$

C)  $\sqrt{8^3}$

D)  $4^{\frac{4}{3}}$

39) Find the value of  $(\frac{8}{27})^{-\frac{2}{3}}$ .

A)  $\frac{4}{9}$

B)  $\frac{9}{4}$

C)  $-\frac{4}{9}$

D)  $-\frac{2}{3}$

40) The expression  $(2y)^{\frac{2}{5}}$  is equivalent to

A)  $\sqrt[5]{2y^2}$

B)  $\sqrt{2y^5}$

C)  $\sqrt[5]{4y^2}$

D)  $\sqrt{32y^5}$